

**Marine Isopoda from the Coast of Hikigawa Town,
Kii Peninsula, Middle Japan (1)***

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和歌山県日置川町沿岸の等脚目 (1)

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1. 和歌山県日置川町沿岸における岩礁生物の調査研究の際に採集された等脚目甲殻類のうち、ウミナナフシ科ならびヘラムシ科のものについて報告した。

2. 記載した種は下記の 4 種である。

Family Paranthuridae ウミナナフシ科

Paranthura hasticauda, n. sp. ヤリオウミナナフシ (新称)

Paranthura maculosa, n. sp. マダラウミナナフシ (新称)

Family Idoteidae ヘラムシ科

Synisoma pacificum, n. sp. クロシオナガヘラムシ (新称)

Synidotea hikigawaensis, n. sp. ヘリキレワラジヘラムシ (新称)

なお, *Synisoma* 属のヘラムシは太平洋水域ではじめての発見である。

Since 1972, a faunal and floral research project of the coast of Hikigawa Town, Wakayama Prefecture, Kii Peninsula, Middle Japan has been held by some scientists and students at the Seto Marine Biological Laboratory, Kyoto University, in order to examine the influence of pollution due to inflow of soils and sand by opening-up of the adjoining forest for making orange orchards. During this research, some marine isopods were collected and many of them were placed at my disposal for identification by Mr. R. Yamanishi and Mr. T. Nishikawa, members of this project. The present paper is intended to report four species from the collection comprizing two paranthurids and two idoteids, all of which are described as new to science. The specimens, preserved in 70% alcohol, were examined in glycerol. All the figures were drawn by using camera lucida.

Before going further, I would like to express my sincere gratitude to Dr. S. Nishimura of the Seto Marine Biological Laboratory for many useful suggestions and reading the manuscript, to Dr. S. Fuse of the same laboratory for planning and promoting the research, and to Mr. R. Yamanishi and Mr. T. Nishikawa for their kindness in collecting such interesting specimens and rendering valuable suggestions.

Family Paranthuridae

The family Paranthuridae has previously been known from Japan by a single species,

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Paranthura japonica Richardson. In this paper, two new additional species of the genus are reported.

Paranthura hasticauda, n. sp.
(Japanese name: Yario-uminanafushi)
(Fig. 1)

Material examined: 1 ♂ (holotype, 4.1 mm in body length) and 4 ♀ (1 ♀, allotype, 5.0 mm

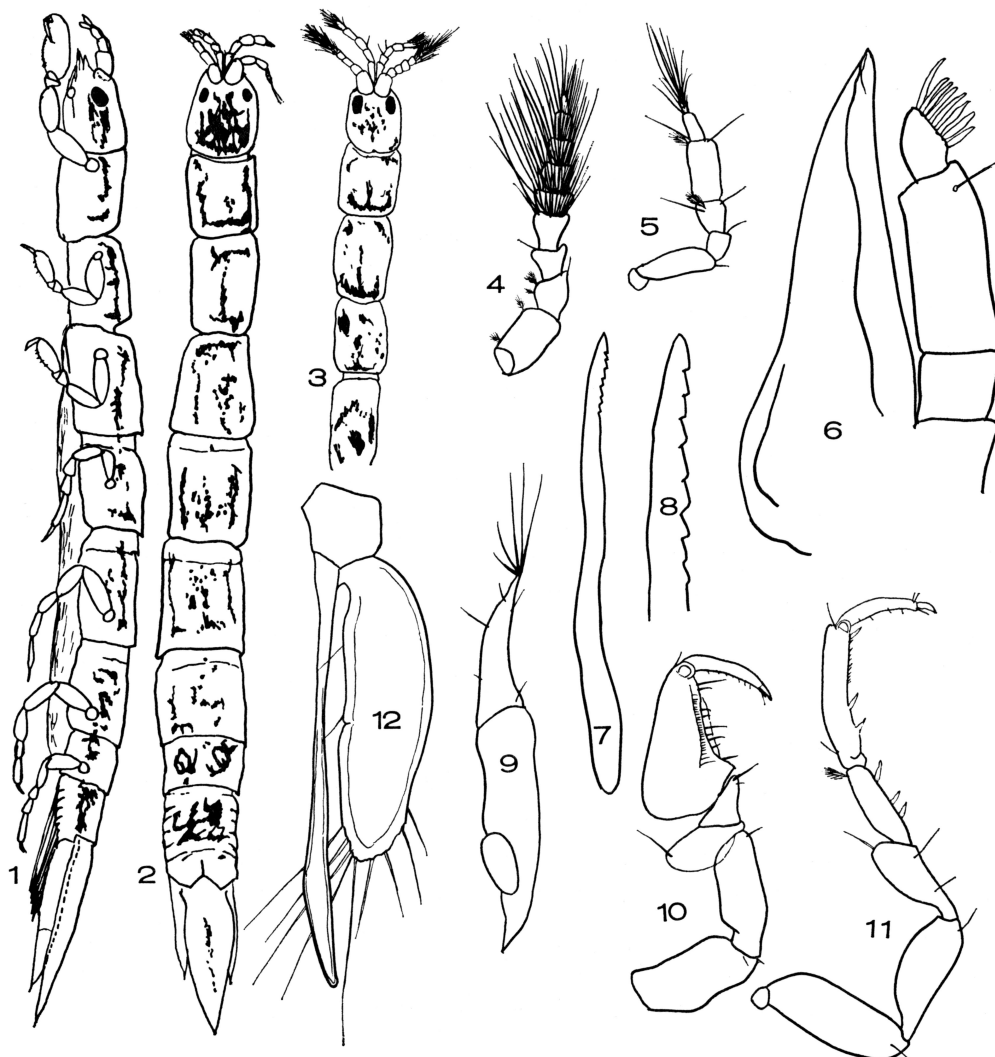


Fig. 1. *Paranthura hasticauda*, n. sp. 1. Lateral view of female. 2. Dorsal view of the same. 3. Anterior part of male. 4. First antenna of male. 5. Second antenna of male. 6. Mandible. 7. First maxilla. 8. Tip of first maxilla. 9. Maxilliped. 10. First pereopod. 11. Sixth pereopod. 12. Second pleopod of male. (1~2, female paratype; 3~12, holotype).

in body length and 3 ♀, paratypes, 4.9 mm~6.2 mm in body length), off the mouth of the Hiki river, coll. N. Nunomura and R. Yamanishi, Dec. 27, 1972. Type series is deposited at the Osaka Museum of Natural History; holotype male, OMNH-Ar-129; allotype, OMNH-Ar-130; paratypes, OMNH-Ar-131~133.

Description: Body, semi-transparent with black patches, slender about twelve times as long as wide. First six somites of pereaeon similar in length, seventh somite slightly shorter than the sixth. Eyes rather big, composed of about 14 ocelli. Demarcation of pleonal somites visible in dorsal view; first $1\frac{1}{2}$ times as long as the second; the next four somites similar in length; sixth somite broad with pronounced posterior median cleft, so it looks like two pentagonal plates.

First antenna (Fig. 1-4) composed of eight segments, more thickly haired in male than in female.

Second antenna (Fig. 1-5) composed of six peduncular segments. Both antennae often orange-colored in alcohol, especially at the basal part.

Mandible (Fig. 1-6) with a three-segmented palp; first one short; second the longest with a seta at distal part; the terminal segment with a row of eight setae on inner border. Apex acute.

First maxilla (Fig. 1-7, 8) slender with nine sawlike teeth near the apex of outer lobe.

Maxilliped (Fig. 1-9) with two free segments, both rather slender, distal segment somewhat smaller than the proximal and with about five setae at the tip and several thinner setae at other portions.

Peraeopods I-III (Fig. 1-10) subchelate. Basis and ischium oblong. Merus and carpus triangular. Propus big with many setae on the lower margin. Propus of pereaeopod I is stouter than that of pereaeopod II or III. Dactylus long with a claw.

Peraeopods IV-VII (Fig. 1-11) are all walking legs. Basis and ischium oblong. Merus triangular. Carpus rectangular with three stout sawlike setae. Propus long with three stout sawlike setae. Dactylus long with a claw.

Second male pleopod (Fig. 1-12) provided with long appendix masculina but rather simple in shape. Other pleopods of both sex are similar in shape.

Telson long and spear-head shaped, without statocyst and partly orange-colored in alcohol. Uropod not extending beyond telson.

Habitat: Off the mouth of Hiki river, sandy bottom.

Remarks: The present new species is characteristic in external feature, especially in the shape of telson.

Paranthura maculosa, n. sp.

(Japanese name: Madara-uminanafushi)

(Figs. 2 and 3)

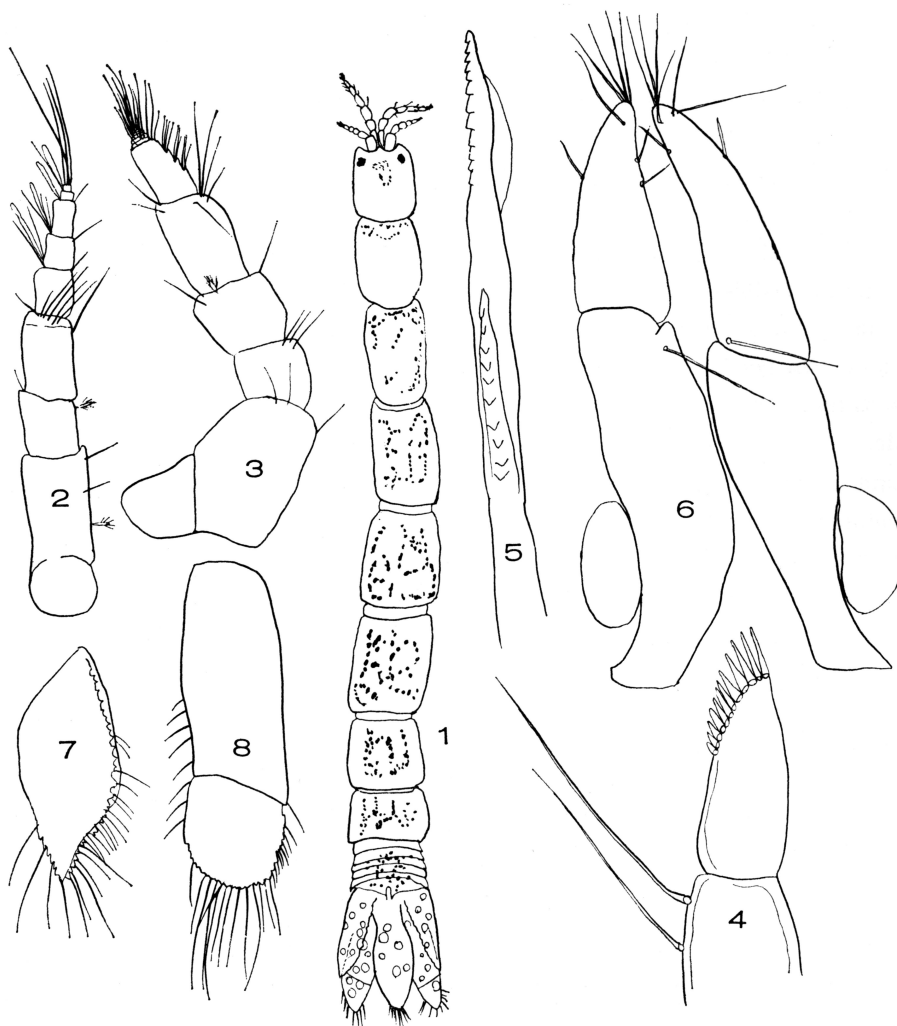


Fig. 2. *Paranthura maculosa*, n. sp. 1. Dorsal view. 2. First antenna. 3. Second antenna. 4. Terminal segment of mandibular palp. 5. First maxilla. 6. Maxilliped. 7. Exopod of uropod. 8. Endopod of uropod. (1 and 4, holotype; 2~3 and 5~8, female paratype).

Material examined: 4♀ (1♀, holotype, 12.0 mm in body length and 3♀, paratypes, 6.2 mm~7.5 mm in body length), off the mouth of Hiki river, 4 m deep, Kii Peninsula, Japan, coll. R. Yamanishi *et al.*, Dec. 16, 1972.; unfortunately no male specimen has been collected. Type series is deposited at the Osaka Museum of Natural History, holotype female, OMNH-Ar-134; paratypes, OMNH-Ar-135~137.

Description: Body rather slender, the length except both antennae eleven times as large as the width. Body color dull yellow with black spots scattered all over the surface

and semi-transparent rings especially distinct on posterior part. Anterolateral angles of cephalon projected as forward as rostrum. Eyes mediocre with thirteen to sixteen ocelli. Peraeonal segments I-V are similar in length. Sixth is about two-third the length of fifth. Seventh is about half the length of fifth. Demarcation of pleonal somites visible in dorsal view; first five similar in length; sixth with a rounded pronounced posterior median cleft. Telson somewhat elongate and lanceolate, without statocyst, dentate along the whole border. Endopodite of uropod equaling backward beyond the telson.

First antenna (Fig. 2-2) composed of eight segments; first segment oblong and last two very small.

Second antenna (Fig. 2-3) composed of five peduncular segments and flagella; demarcation of basal part not distinct, so first two peduncular segments may really be divided into three segments.

Mandible (Fig. 2-4) with a three-segmented palp, last segment with a row of twelve setae on inner border.

First maxilla (Fig. 2-5) with two lobes; the longer with twelve sawlike teeth; the

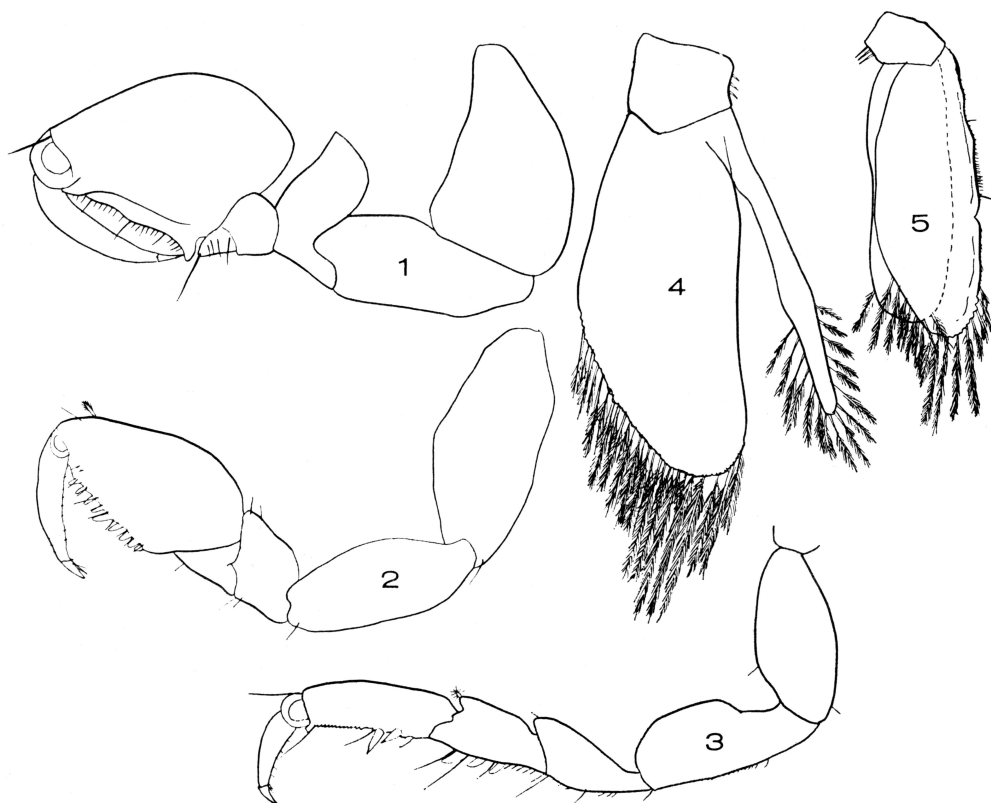


Fig. 3. *Paranthura maculosa*, n. sp. 1. First peraeopod. 2. Second peraeopod. 3. Seventh peraeopod. 4. First pleopod. 5. Second pleopod. (1~5, holotype).

shorter with ten sawlike teeth; apex of the longer lobe brown in alcohol.

Maxilliped (Fig. 2-6) with two free segments; last segment tapering to a somewhat narrow tip.

Peraeopod I-III (Fig. 3-1, 2) subchelate. Peraeopod I stouter than peraeopod II or III. Peraeopods II and III with nine teeth on inner side of propus.

Peraeopods IV-VII (Fig. 3-3) are all walking legs; basis and ischium oblong; merus triangular; carpus rectangular with about five teeth on inner border; propus oblong with three teeth on inner border; dactylus with a claw at the tip.

Pleopod I (Fig. 3-4) with broad exopod and narrow endopod. Pleopods II-V (Fig. 3-5) are all similar in shape in female.

Exopod of uropod (Fig. 2-7) with postlateral border conspicuously sinuate. Terminal segment of endopod (Fig. 2-8) also with sinuate border and many setae.

Habitat: Specimens were collected from the rocky bottom, 4 m deep and about 40 m off the shore line, where brown algae such as *Sargassum tortile*, *S. serratiform*, *S. micracanthum* and *S. sagamianum* were predominating.

Remarks: The present new species resembles *Paranthura ostergaadi* Miller and Menzies, collected from Hawaii, but differs from the latter in the shape of sixth pleonal somite and the shape of mandibular palp and maxilla.

mm in body length) and 3 ♀ (4.4 mm~12.2 mm in body length, 1 allotype and 2 paratypes), Ichie, 3 m deep, Kii Peninsula, Japan, coll. R. Yamanishi *et al.*, Dec. 11, 1972. Type series is deposited at the Osaka Museum of Natural History (holotype, OMNH-Ar-138; allotype OMNH-Ar-139; paratypes, OMNH-Ar-140~142). 2) 2 ♂ (13.8 mm~14.6 mm in body length, off the mouth of Hiki river, 4 m deep, Kii Peninsula, Japan, coll. R. Yamanishi *et al.*, Dec. 16, 1972. 3) 1 ♀ (11.8 mm in body length), Ichie, 5 m deep, Kii Peninsula, Japan, coll. T. Nishikawa *et al.*, Dec. 14, 1973.

Description: Body elongate and rather depressed. Rostral projection of cephalon bluntly angulate, extending as forward as anterolateral angles. Eyes lateral, rather small

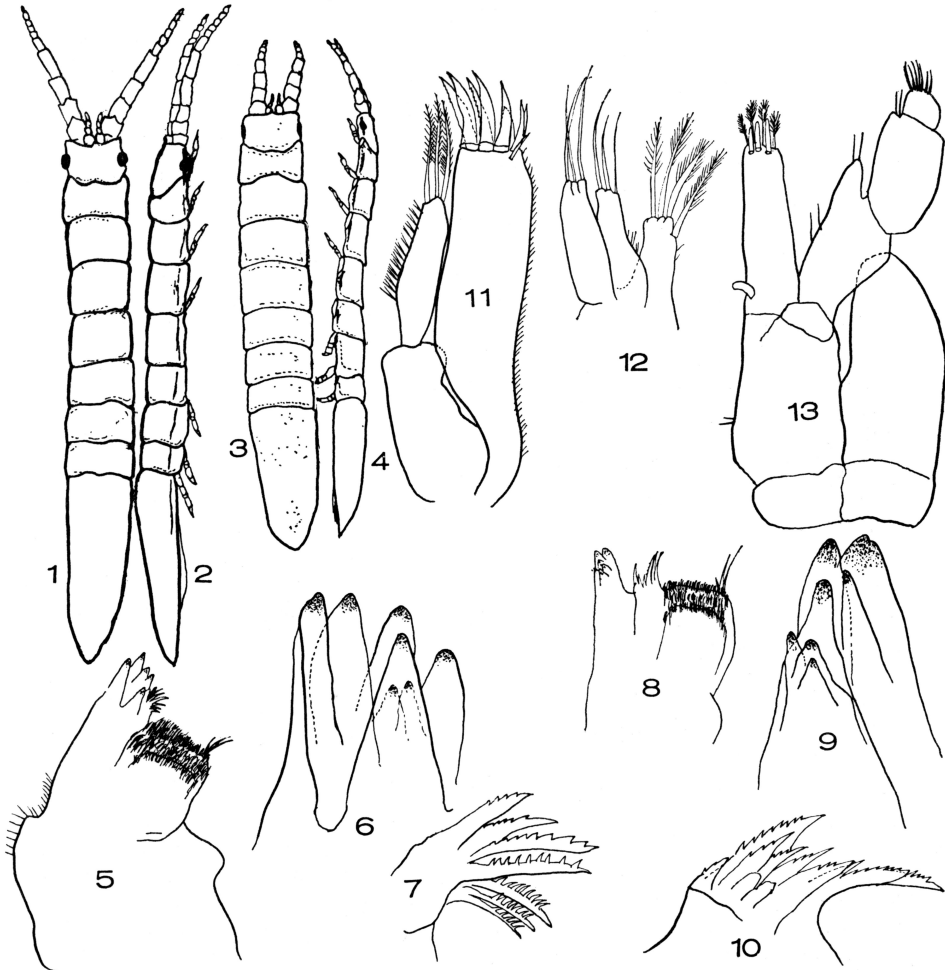


Fig. 4. *Synisoma pacificum*, n. sp. 1. Dorsal view of male. 2. Lateral view of the same. 3. Dorsal view of female. 4. Lateral view of the same. 5. Left mandible. 6. Pars incisiva and lacina mobilis of the same. 7. Toothed spine of the same. 8. Right mandible. 9. Pars incisiva and lacina mobilis of the same. 10. Toothed spine of the same. 11. First maxilla 12. Second maxilla. 13. Maxilliped. (1~4 and 11~12, paratype; 5-10 and 13, holotype).

in female with about 120 ocelli but somewhat larger in male with about 150 ocelli. Coxal plates very small. Pleon without distinct somite. Pleotelson long, exceeding one-third of body length. Body color dull yellow in alcohol and with a pair of discontinuous longitudinal lines running from cephalon to pleotelson across eyes and near the base of coxal plates.

Antenna I (Fig. 5-1) short and four-segmented; the first rounded, the second and third oblong and the last is a flagellum bearing seven to nine pairs of aesthetascs on the outer

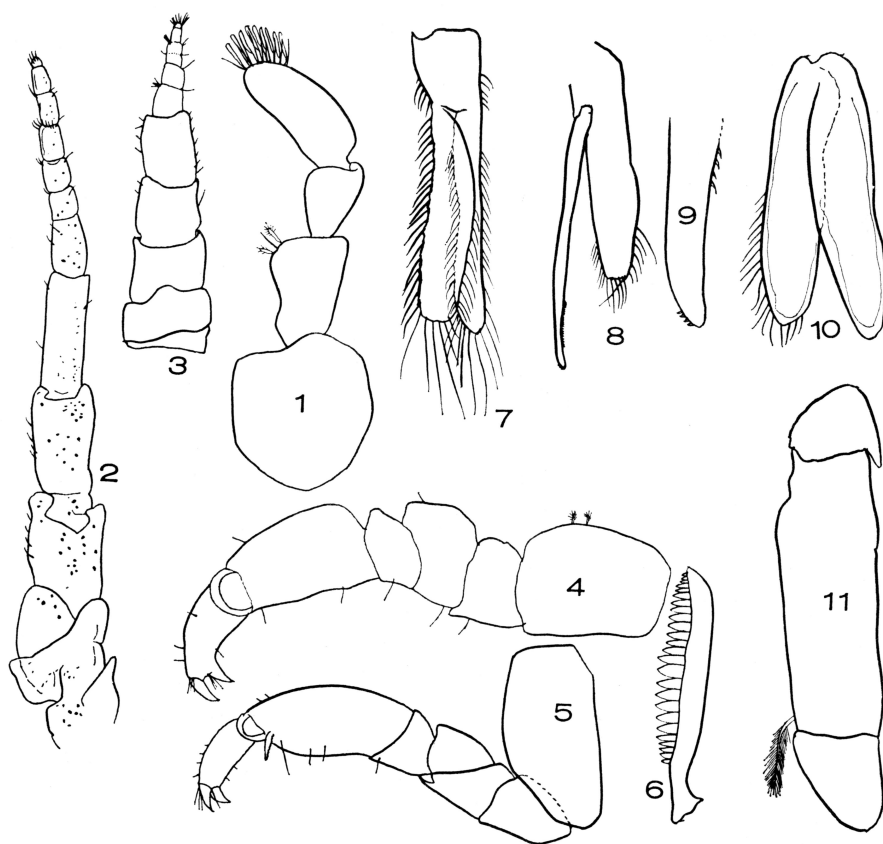


Fig. 5. *Synisoma pacificum*, n. sp. 1. First antenna of male. 2. Second antenna of the same. 3. Second antenna of female. 4. Second peraeopod of female. 5. Third peraeopod of female. 6. Comb-like setae at distal end of propus of female third peraeopod. 7. First pleopod of male. 8. Second pleopod of male. 9. Tip of stylus of male second pleopod. 10. Third pleopod of male. 11. Endopod of uropod of male. (1~11, paratype).

surface.

Antenna II (Fig. 5-2 and 3) much longer than antenna I, especially in male; peduncle consists of five segments in both sex; flagellum consists of seven segments in male but only five in female.

Mandibles (Fig. 4-5~10) are somewhat different between right and left; pars incisiva (Figs. 4-6 and 9) consists of four sharp teeth; lacina mobilis consists of three teeth and attended by seven to eight recurved toothed spines (Figs. 4-7 and 10); processus molaris handmill-shaped with about three long setae at distal margin.

Maxilla I (Fig. 4-11) with nine to eleven setae at the tip of exopod and three setae at the tip of endopod.

Maxilla II (Fig. 4-12) with three lobes, each lobe with three to four setae at the tip.

Maxilliped (Fig. 4-13) rather broad; exopod rounded; palp four-segmented; endite with only one coupling hook in both sex and with three stout setae and four plumose setae at the tip.

Peraeopods I-VII (Figs. 5-4 and 5) are all normal walking legs; basis rectangular and sometimes with one or two plumose setae at outer side; ischium and merus rectangular; carpus small and rectangular; propus rectangular with a comblike tooth at distal end in some legs (Fig. 5-6).

Endopod of male second pleopod (Fig. 5-8 and 9) forms a long stylus with four small teeth at the tip and about twenty-three teeth at inner side. Other pleopods of both sex are similar in shape (Fig. 5-7 and 10).

Endopod of uropod (Fig. 5-11) two-segmented, with a long seta near distal part of basal segment.

Habitat: All specimens were collected from a similar habitat; 3 m-5 m in depth, rocky hard bottom overgrown by *Sargassum tortile*, *S. serratiform*, *S. tosaense* and with piled-up remains of calcareous algae, about 40 m off the shore.

Remarks: So far as I am aware, two species have been recognized as valid in the genus *Synisoma* and both are reported from Europe (Mediterranean Sea, Black Sea and Western shores of North Atlantic). The present new species is apparently allied to *S. acuminatum* Leach, 1815 in some external aspects (elongated body, coxal plate of peraeon very small, pleotelson narrow forming an acute terminal projection). However, the former is distinctly separated from the latter by the following features: (1) flagella of second antenna is shorter and less numerously segmented, (2) with a black line crossing eyes (3) without indication of longitudinal median dorsal carina.

Synidotea hikigawaensis, n. sp.

(Japanese name: Herikire-waraji-heramushi)

(Figs. 6 and 7)

Material examined: 1) 5 ♂ (6.3 mm~11.0 mm in body length, 1 allotype and 4 paratypes) and 7 ♀ (1 ♀, holotype, 11.8 mm in body length and 6 paratypes, 4.8 mm~10.3 mm in body length), off the mouth of Hiki river, 4 m deep, Kii Peninsula, Japan, coll. R. Yamanishi *et al.*, Dec. 16, 1972. Type series is deposited at the Osaka Museum of Natural History (holotype, OMNH-Ar-146; allotype, OMNH-Ar-147; paratypes, OMNH-Ar-148~157). 2) 1 ♂ (9.5 mm in body length) and 2 ♀ (7.6 mm~9.6 mm in body length), Ichie, 3 m deep, Kii Peninsula, Japan, coll. R. Yamanishi *et al.*, Dec. 11, 1972.

Description: Body rectangular about three times as long as wide. Cephalon rectangular, anterior border straight. First antenna very short, second antenna fairly long. Body color dull yellow with brown spots, especially densely along the dorsal medial line and pleotelson. Eyes big with about three hundreds small ocelli, situated anterolaterally. Each

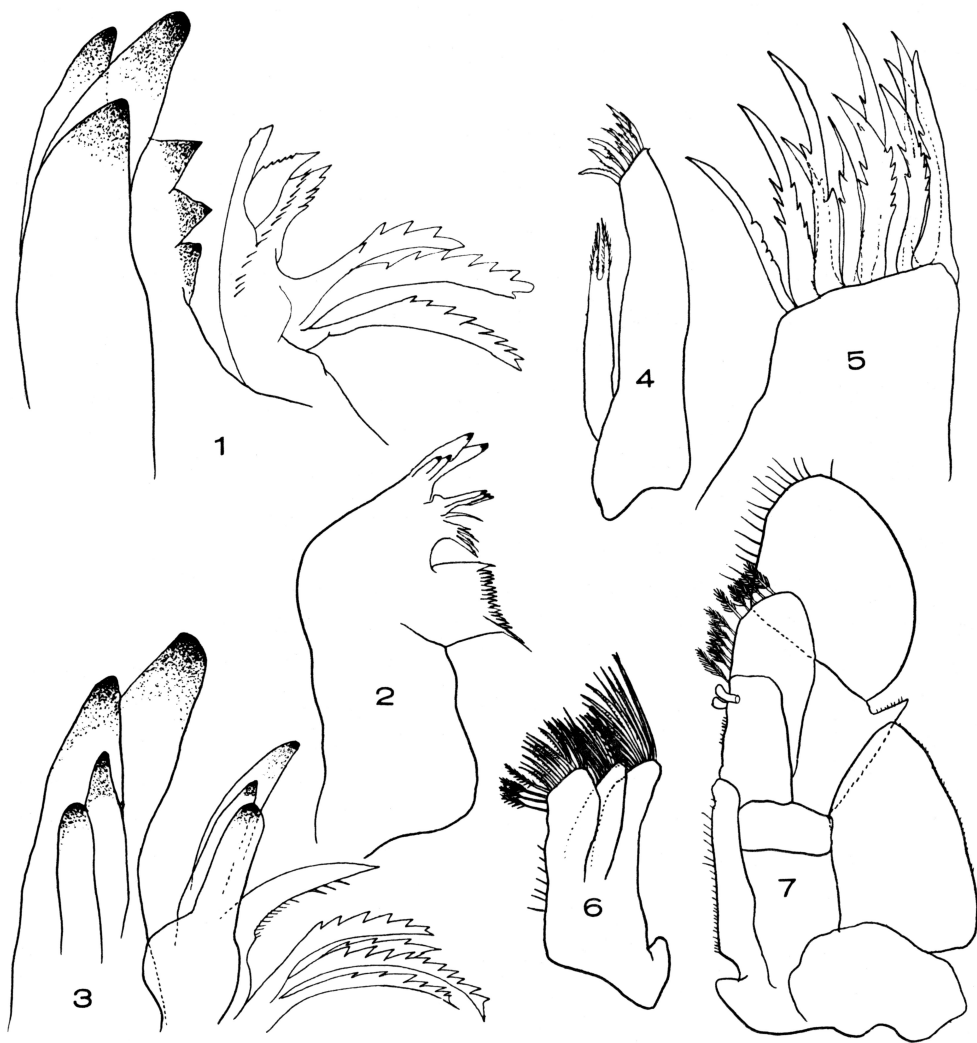


Fig. 6. *Synidotea hikigawaensis*, n. sp. 1. Left mandible. 2~3. Right mandible. 4. First maxilla. 5. Tip of exopod of first maxilla. 6. Second maxilla. 7. Maxilliped. (1~3, male holotype; 4~7, female paratype).

peraeonal segment similar in length but first peraeonal segment is narrow at the central part. Coxal plate is not seen in dorsal view. Distinct crevices are found between each peraeonal segment.

Mandible (Fig. 6-1~3) with stout corpus; pars incisiva composed of three to four sharp teeth; lacina mobilis consists of three teeth but its shape rather different between both sides, about seven swordlike toothed spines situated between lacina mobilis and processus molaris; processus molaris stout and forming a big handmill-shaped structure surrounded

by twenty teeth.

First maxilla (Figs. 6-4 and 5) composed of two lobes; exopod with about ten setae at the tip; endopod with two setae at the tip.

Second maxilla (Fig. 6-6) composed of three lobes, each lobe with about fifteen setae at the tip.

Maxilliped (Fig. 6-7) with a three-segmented palp; first one small and rectangular; second one trapezoid; terminal one is rounded at apex; endite with a pair of coupling the medial margin and with several setae at the tip.

All peraeopods not so long. Peraeopod I (Fig. 7-4) somewhat shorter and more thickly haired than other legs. Peraeopods II-VII (Fig. 7-5) are all similar in shape; basis oblong; ischium, merus and carpus small; propus oblong; dactylus with a claw at the tip.

Stylus of male second pleopod (Fig. 7-8) not so long and rather simple in shape. Other pleopods of both sex are similar in shape (Figs. 7-6 and 7).

Endopod of uropod (Fig. 7-9) two-segmented, with two setae at the distal part of the

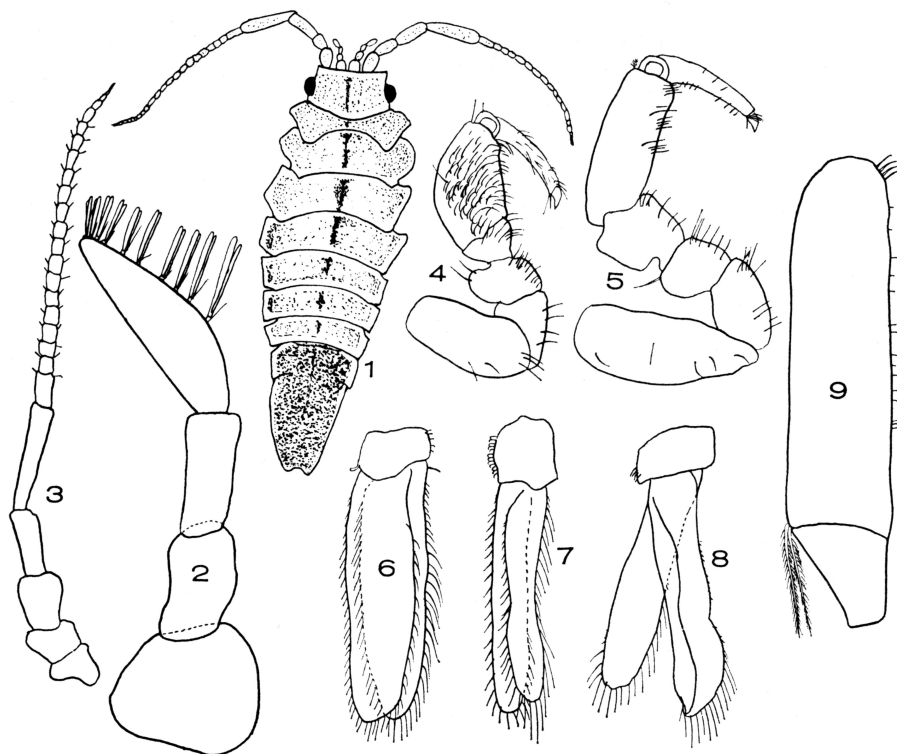


Fig. 7. *Synidotea hikigawaensis*, n. sp. 1. Dorsal view of female holotype. 2. First antenna of the same. 3. Second antenna of the same. 4. First peraeopod of the same. 5. Fourth peraeopod of the same. 6. First pleopod of the same. 7. First pleopod of male paratype. 8. Second pleopod of the same. 9. Uropod of holotype.

basal segment. Pleotelson petal-shaped with a dent at the tip.

Habitat: All the specimens were collected from similar habitat: 3–4 m deep, about 40 m from shore, rocky hard bottom, algal growths consist of exclusively brown algae with the prevalence of *Sargassum*, the most dominant species being *Sargassum tortile*.

Remarks: The present new species is clearly distinguished from other species of *Synidotea* by peculiar external aspects (shape of pleotelson, distinct cleives found between each peraeonal segment and fairly short legs).

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